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**STUDIES IN THE ANDRENIDAE OF NORTH AMERICA—I\***  
(Hymenoptera)

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There are probably few genera of bees which are more imperfectly known than the genus *Andrena*. Nearly one thousand names have been applied to the North American members of this group, yet little is known of the synonymy, distribution, or habits of the majority of the species, and only a few have been adequately described in both sexes. This is particularly true of the Pacific Coast, where the *Andrena* fauna is remarkably rich and still comparatively little known. It is therefore the object of the present series of articles to make known, from time to time, biological and distributional information pertaining to our American forms, and to present preliminary keys for the separation of various groups of species.

The species discussed below form a convenient but unnatural assemblage, defined primarily by characters of the female sex. The series comprises those *Andrena sensu lato*, exclusive of *Trachandrena*, *Diandrena*, and *Parandrena*, in which the females are black, with the

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pubescence all or predominantly black. The species are confined to western North America, and, although occasionally abundant, they are poorly represented in collections. Most of the species of which the habits are known appear to be oligotropic.

The black *Andrenas* fall rather readily into three more or less natural but unrelated groups. The first of these includes *porterae*, *caliginosa*, and *submaura*. The females of this group may be recognized by the long, first flagellar segment of the antennae (at least as long as the three following together), angular cheeks, and short facial foveae, the males by the yellow clypeus. The second series (*nigerrima* group) is characterized by the poorly defined, non-rugulose enclosure of the propodeum and the shorter, first flagellar segment never as long as the three following together. These species are confined primarily to the Rocky Mountain region. The last series (*periristis-blaisdelli* group) may be known by the well defined, rugulose or carinate enclosure of the propodeum (thus approaching *Trachandrena* Robertson). Apparently this group falls within *Melandrena* Perez (as defined by Hedicke<sup>2</sup>), a subgenus based upon the European relatives of *A. morio* Brullé.

Dr. Hedicke (*op. cit.* p. 212) has proposed *Glyphandrena* for the species related to *A. carbonaria* Linn. (Europe), but these differ in the white tibial scopae and anal fimbriae of the females.

The following keys may be useful in separating the North American black *Andrenae*:

#### Females

1. Enclosure of propodeum poorly defined, finely punctured or finely tessellate, never strongly rugulose or carinate..... 2
- Enclosure of propodeum well defined, coarsely punctured, strongly rugulose or carinate..... 9
2. First flagellar segment as long as the three following together; facial foveae scarcely attaining upper margin of antennal bases; genae more or less right angled..... 3
- First flagellar segment shorter than the three following together; facial foveae attaining at least the lower margin of the antennal bases; genae broadly rounded..... 5
3. Malar space nearly as long as broad, more or less subquadrate; process of labrum obtuse or truncate at apex..... 4
- Malar space very narrow, several times as broad as long; process of labrum notched at apex. 9.5–10.5 mm. Calif..... (1) *caliginosa*
4. Clypeus distinctly broader than long; process of labrum subquadrate, sides indented, apex subtruncate; smaller species. 9–10 mm. S. Calif., at fls. *Ribes*..... (2) *submaura*
- Clypeus strongly protuberant, nearly as long as broad; process of labrum subtriangular, sides entire, apex obtuse; larger species. 12–14 mm. New Mexico to Pacific Coast, at fls. *Ribes*..... (3) *porterae*

<sup>2</sup> Hedicke, H., 1933, *Beiträge zur Systematik der Gattung Andrena*, Mitt. Zool. Mus. Berl., 19:216.

- 5. First flagellar segment distinctly longer than the two following together; abdomen clothed with short, fine, erect hairs . . . . . 6
- First flagellar segment scarcely as long as the two following together; abdomen clothed with long, coarse, depressed hairs; process of labrum deeply emarginate; clypeus with a well defined, median smooth line. 9.5–10 mm. S. Calif., at fls. *Ceanothus* . . . . . (4) *ceanothifloris*
- 6. Facial foveae distinctly widened above the middle, narrowed below; process of labrum transverse or emarginate, not triangular . . . . . 7
- Facial foveae parallel-sided, scarcely widened above; process of labrum subtriangular, the apex narrowly rounded; median line of clypeus poorly defined. 9–9.5 mm. Colo . . . . . (5) *hicksi*
- 7. Process of labrum large, apex emarginate . . . . . 8
- Process of labrum transverse, welt-like; median line of clypeus poorly defined; abdomen very finely, sparsely, indistinctly punctured, the punctures mostly about three puncture widths apart. 9 mm. Wyo . . . . . (6) *pineti*
- 8. Clypeus with a distinct but irregular median smooth line; apices of wings clouded; basal one-half of first abdominal tergite impunctate. 10 mm. New Mex . . . . . (7) *nigerrima*
- Clypeus without a median smooth line; apices of wings not clouded; basal one-half of first abdominal tergite punctured; abdomen with a slight bluish tint. 11 mm. Colo . . . . . (8) *irana*
- 9. Wings lightly infuscated to very dark blackish; clypeus with a median longitudinal impunctate line; pubescence of scutum usually short . . . . . 10
- Wings hyaline or subhyaline; clypeus more uniformly punctured, usually without a median smooth line (cf. *rubroincta*); pubescence of scutum at least one-half as long as the pleural hairs . . . . . 13
- 10. Process of labrum elongate, constricted near base; propodeum rugosopunctate, enclosure with most of the rugae longitudinal or slightly oblique; abdomen distinctly punctured . . . . . 11
- Process of labrum more or less triangular, apex subtruncate; propodeum tessellate, with a few shallow punctures, basal rugae of enclosure longitudinal, apical rugae transverse; scutum dull, pubescence short, dense; abdomen finely punctured. 15–16 mm. S. Calif. . . . . (9) *pertristis*
- 11. Wings brownish; abdominal tergites with a very narrow impunctate apical margin . . . . . 12
- Wings very dark blackish; abdominal tergites with a distinct impunctate apical margin; scutum clothed with short, very sparse hairs; enclosure of propodeum coarsely rugulose. 14–15 mm. C. Calif. . . . . (10) *grundeli*
- 12. Punctures of scutum separated, mostly less than one to one puncture width apart; facial foveae not attaining basal line of clypeus; pubescence of scutum about one-fourth as long as that of pleura, moderately dense; rugae of propodeum fine, mostly oblique. 10–12 mm. S. Calif. at fls. *Potentilla* . . . . . (11) *bernardina*
- Punctures of scutum contiguous and subcontiguous; facial foveae extending below basal line of clypeus; pubescence of scutum short, sparse; rugae of propodeum coarse, mostly longitudinal. 15 mm. Calif. . . . . (12) *omninigra*
- 13. Tibial scopa loosely formed of long, erect hairs . . . . . 14
- Tibial scopa densely formed of compact, more or less depressed hairs . . . . . 18

14. Scutum dull and rather obscurely punctured. . . . . 15  
 —. Scutum more or less shining, distinctly punctured. . . . . 16
15. Abdominal tergites with a broad impunctate apical margin, remaining surface finely punctured, the punctures mostly separated by less than three puncture widths; process of labrum moderately constricted apically; smaller species. 10–11 mm. S. Calif. at fls. *Cryptantha* . . . . . (13) *blaisdelli*  
 —. Abdominal tergites with a very narrow impunctate apical margin, remaining surface very finely punctured, the punctures mostly separated by more than three puncture widths; process of labrum strongly constricted apically; larger species. 11–13 mm. Calif., Ariz., at fls. *Oenothera* . . . . . (14) *oenotherae*
16. Notal hairs moderately long, not conspicuously plumose; apical depressions of abdominal tergites finely, distinctly punctured; process of labrum narrowly truncate at apex. . . . . 17  
 —. Notal hairs short, conspicuously plumose; apical depression of first abdominal tergite impunctate except at sides; process of labrum broadly truncate (feebly emarginate) at apex. 10–11.5 mm. S. Calif. . . . . (15) *flandersi*
17. Clypeal punctures varying from one to three puncture widths apart; facial foveae attaining basal line of clypeus; punctures of scutum mostly one to two puncture widths apart; abdominal tergites with a broad impunctate apical margin comprising, at middle, one-half of posterior depression. 12 mm. S. Calif. . . . . (16) *linsleyi*  
 —. Clypeal punctures nearly contiguous; facial foveae falling conspicuously short of basal line of clypeus; punctures of scutum mostly two or more puncture widths apart; abdominal tergites with a narrow impunctate apical margin comprising, at middle, less than one-third of posterior depression. 11 mm. S. Calif. . . . . (17) *rubrotincta*
18. Scutum shining, distinctly punctured. . . . . 19  
 —. Scutum dull, more or less obscurely punctured; abdominal tergites finely, closely punctured except for a very narrow smooth apical margin; pubescence of scutum short, erect. 11–13 mm. Calif. at fls. *Phacelia* . . . . . (18) *nigra*
19. Propodeum finely granulate-punctate, enclosure finely, closely, longitudinally rugulose; abdomen black. 12 mm. S. Calif. . . . . (19) *deserticola*  
 —. Propodeum coarsely granulate-punctate, enclosure coarsely and transversely or obliquely rugulose; abdomen lightly tinted with bluish. 8.5–11 mm. Calif. . . . . (20) *vanduzeei*

#### Males

1. Clypeus yellow; first flagellar segment subequal to or longer than the two following together. . . . . 2  
 —. Clypeus black; first flagellar segment at most a little longer than the second segment. . . . . 4
2. Anterior trochanters simple, without an apical finger-like process; malar space large, nearly as long as broad, subquadrate. . . . . 3  
 —. Anterior trochanters armed at apex with a slender, finger-like process; malar space oblong, distinctly broader than long; body black, clothed with black pubescence intermixed with whitish; wings tinted with black. 8.5–9 mm. Calif. . . . . (1) *caliginosa*

3. Facial quadrangle broader than long; body black, clothed with black pubescence intermixed with whitish; wings tinted with black. 9 mm. S. Calif. . . . . (2) *submaura*
- Facial quadrangle longer than broad; body brownish, clothed with long fulvous pubescence; wings tinted with yellow. 10 mm. New Mexico to Pacific Coast. . . . . (3) *porterae*
4. Enclosure of propodeum rugulose or carinate, bounded by an elevated rim; mandibles broad, distinctly notched before apex. . . . . 5
- Enclosure of propodeum finely, closely punctured, neither rugulose nor carinate, not bounded by a rim or margin; mandibles long, slender, apex slightly reflexed, simple or very feebly notched. 8.5 mm. S. Calif. . . . . (4) *ceanothifloris*
5. Wings infuscated or blackish. . . . . 6
- Wings hyaline or subhyaline. . . . . 8
6. Process of labrum deeply bilobed. . . . . 7
- Process of labrum subquadrate, apex broadly truncate; vertex densely clothed with long black hairs; pubescence of clypeus all black; propodeum finely reticulate, enclosure with a few distinct, well separated carinae. 12 mm. S. Calif. . . . . (9) *pertristis*
7. Pubescence of face, thorax, and legs almost completely white; larger species. 11 mm. C. Calif. . . . . (10) *grundeli*
- Pubescence of face, thorax, and legs predominantly black; smaller species. 9 mm. S. Calif. . . . . (11) *bernardina*
8. Notum dull, densely hairy, surface partially obscured by the pubescence; abdomen black. . . . . 9
- Notum shining, rather sparsely hairy on disk, surface not obscured by the pubescence; abdomen tinted with bluish. 10 mm. Calif. . . . . (20) *vanduzeei*
9. Abdominal tergites with a distinct impunctate apical margin; process of labrum emarginate, bilobed. . . . . 10
- Abdominal tergites with a very narrow, inconspicuous, impunctate apical margin; process of labrum nearly entire, not bilobed. 10–11 mm. Calif. . . . . (18) *nigra*
10. Hairs of face and propodeum black; first flagellar segment distinctly shorter than second or third. 9.5–11 mm. S. Calif. . . . . (13) *blaisdelli*
- Hairs of face and propodeum predominantly white; first flagellar segment subequal in length to second or third. 10–11 mm. Calif., Ariz. . . . . (14) *oenotherae*

### 1. *Andrena caliginosa* Viereck

*Andrena caliginosa* VIIEECK, 1916, Proc. Acad. Nat. Sci. Phil., 68:552, ♀.

*Andrena maura* VIIEECK, 1924, Can. Ent., 56:31, ♂ (nec ♀), new syn.

*A. caliginosa* Viereck was first described from one specimen, a female taken at San Jose, California. In 1924, Viereck proposed the name *maura* for a male (holotype) from Santa Clara Co., California, and a female (allotype) from the mountains near Claremont, California (about four hundred miles to the south). An examination of

the type specimens<sup>3</sup>, as well as material from the type series (Pomona College collection) reveals the fact that the sexes associated by Viereck represent different species. The Viereckian female belongs to the species described below as *submaura*. The true female of this species (*caliginosa*) may be redescribed as follows:

*Female*.—Black, clothed entirely with black pubescence. *Head* with its facial quadrangle about as long as broad, and more or less uniformly clothed with long, erect hairs; antennae with first flagellar segment subequal in length to the three following together; vertex dull, finely tessellate, sparsely punctured; frons closely striate; foveae broadly rounded above, and occupying about three-fourths of ocellocular space, narrowly rounded below, and attaining basal line of antennae; clypeus polished, convex, slightly protuberant, coarsely punctured, the punctures mostly from less than one to one puncture width apart; process of labrum longer than broad, apex notched, sides slightly concave; malar space narrow, very strongly transverse, elevated portion polished. *Scutum* dullish, finely tessellate, discal punctures shallow, moderately large, mostly two or three puncture widths apart, except along margins where they are about one puncture width apart; pubescence erect, about as long as that of pleura; scutellum a little more closely and distinctly punctured than scutum; propodeum with its enclosure poorly defined, feebly shining, finely tessellate, practically nude, remaining surface moderately shining, finely reticulate, moderately densely clothed with long hairs; legs slender, tibial scopa long, but moderately compact; wings tinted with brownish, veins and stigma brown. *Abdomen* shining, finely, closely tessellate, finely sparsely, obscurely punctured; apical fimbria black. Length: approx. 9 mm., anterior wing 7.5 mm.

Material studied (in addition to the types): 2 ♂♂, 2 ♀♀, Santa Clara Co., Calif., (C. F. Baker, Pomona College Collection), 3 ♂♂, 1 ♀, Mt. Diablo, Calif., Mar. 19, 1932 (Linsley), 1 ♂, Berkeley, Calif., Jan. 30, (E. S. Ross), and 1 ♂, Griffith Park, Los Angeles, Calif., March 14, 1936 (K. Anderson).

*Andrena maura* was made by Viereck (*op. cit.* p. 20) the type of a new subgenus, *Dactylandrena*, distinguished from typical *Andrena* by the presence of a spine-like process on the anterior trochanters of the male, and by the large malar space. However, there can be little doubt that *A. porterae* and *A. submaura* are both very closely related to *maura* (= *caliginosa*), and yet neither of these possess the process on the trochanters. Also, as shown above, in the true female of *maura* (*caliginosa*) the malar space is scarcely larger than usual. Apparently the only important characters shared by the above three species are the yellow clypeus of the male and the long, first flagellar segment of the female (at least as long as the three following together), angular cheeks, and short facial foveae. This combination of characters will suffice to separate the group from other black *Andrenas*, but hardly from all other species of *Andrena* s. str. It therefore seems advisable to suppress the name *Dactylandrena*.

<sup>3</sup> The types of this species are on deposit in the United States National Museum, not in the Canadian National Collection as is stated by Viereck.

## 2. *Andrena submaura* Linsley, new species

*Andrena maura* VIERECK, 1924, Can. Ent. 56:31, ♀ (nec ♂).

*Male*.—Black, clothed with long whitish and blackish pubescence. *Head* with its facial quadrangle broader than long, pubescence of underside and vertex mostly white, remainder black; antennae dark brownish-black, first flagellar segment longer than the two following taken together, frons finely striate-reticulate; clypeus polished, convex, almost entirely yellow, sparsely, shallowly, but not finely punctured, the punctures a little smaller and closer around the margins; process of labrum reduced to a shining, transverse ridge at base; malar space well developed, nearly as long as broad, polished, with a few scattered, fine punctures, more numerous near base; mandibles elongate, slender, strongly bowed, notched before apex. *Thorax* clothed above with black and whitish hairs intermixed, pubescence of pleura black, of venter white, that of pleura a little longer than on scutum; scutum finely, closely tessellate and dull around margins, shining on disk where the punctures are moderately coarse and separated by one to several puncture widths; scutellum more closely and coarsely punctured than scutum, the punctures mostly less than one puncture width apart, disk shining; metanotum dull, finely, closely tessellate, shallowly and inconspicuously punctured, clothed with very long, black pubescence; propodeum dull, surface finely tessellate, almost impunctate, clothed at sides with long, black pubescence, enclosure scarcely defined; legs slender; wings tinted with brownish, veins and stigma brown. *Abdomen* shining, surface finely tessellate, obscurely and sparsely punctured, tergites clothed with erect, black hairs, longer on first and second segment, where they are intermixed with whitish hairs, becoming progressively shorter on following segments, sternites with a row of long, erect, pale hairs at base of segments. Length: approx. 9 mm.; anterior wing 7.5 mm.

*Female*.—Black, clothed entirely with black pubescence. *Head* with its facial quadrangle longer than broad; antennae with first flagellar segment subequal in length to the three following, together; vertex dull, closely tessellate, frons closely, longitudinally striate; foveae broadly rounded above, and occupying approximately two-thirds of ocellular distance, narrowly rounded below, and not quite attaining the basal line of antennae; clypeus polished, protuberant, coarsely punctured, the punctures varying from less than one to more than two puncture widths apart; process of labrum much broader at base than long, apical portion subquadrate, nearly parallel-sided, apex broadly truncate; malar space well developed, only a little broader than long, highly polished, practically impunctate. *Scutum* moderately shining, surface finely tessellate, discal punctures shallow, moderately coarse, mostly from two to three puncture widths apart, those of margins coarser, mostly less than one puncture width apart, pubescence erect, a little shorter than on pleura, scutellum similarly clothed, a little more closely, coarsely punctured than scutum; metanotum dull, finely tessellate, very obscurely and sparsely punctured; propodeum with its enclosure poorly defined, dullish, finely, closely tessellate, almost nude, remaining surface moderately shining, finely reticulate, moderately densely clothed with long hairs; legs slender, tibial scopa thin and loose, the hairs of the dorsal margin longer than the width of the tibia, flocculus of posterior trochanters thin, imperfect; wings tinted with brownish, veins and stigma pale brownish. *Abdomen* shining, finely, closely tessellate, finely, sparsely, obscurely punctured; apical fimbria black. Length: approx. 10 mm., anterior wing 7.5 mm.

*Holotype*: No. 4229, Mus. Calif. Acad. Sci. Ent., male, and *allotype*: No. 4230, Mus. Calif. Acad. Sci. Ent., female, and twenty-eight paratypes (one male, the remainder females) taken at **The Gavilan, about 5 miles west of Perris, Riverside Co., Calif., Feb. 22, 1937** (E. G. Linsley). Additional paratypes from the same locality in the collection of the writer are as follows: eight females, March

2, 1937, and three females, March 22, 1936. Paratypes in the collection of Mr. P. H. Timberlake are: 5 females, Sandbergs, Los Angeles Co., March 31, 1933, 3 females, The Gavilan, March 31, 1933, and 11 females, one male, The Gavilan, Feb. 22, 1937. All of the specimens were taken flying about *Ribes indecorum*, from which the females were gathering pollen.

This species appears to be related to *A. caliginosa* Viereck, but may be separated in both sexes by the large, subquadrate malar space. The male may be further distinguished by the absence of the conspicuous finger-like process at the apex of the anterior trochanters, and the female by the shape of the process of the labrum, the apical portion of which is subquadrate, more or less parallel-sided, and broadly truncate.

### 3. *Andrena porterae* Cockerell

*Andrena porterae* COCKERELL, 1900, Ann. Mag. Nat. Hist., (7) 5:401, ♀; BRUNER, 1903, Trans. Am. Ent. Soc., 29:244, ♀; COCKERELL, 1907, Univ. Colo. Studies, 4:244, ♀; LINSLEY, 1937, Pan-Pac. Ent., 13:157.

*Andrena leptanthi* VIERECK and COCKERELL, 1904, Ann. Mag. Nat. Hist., (7) 14:27, ♂; COCKERELL, 1907, Univ. Colo. Studies, 4:246, ♂.

This species, well known in the Rocky Mountain region, occurs also on the Pacific Coast. Records from this area are as follows: *Oregon*: Blitzen Valley, Harney Co., Apr. 19, 1936 (S. G. Jewett); *California*: General Grant National Park, June 27 (P. H. Timberlake), West Walker River, Mono Co., May 7, 1937 (C. D. Michener), and Lake Tahoe, July (Linsley). The females may be readily recognized by the large malar space and strongly produced clypeus, the males by the fulvous pubescence and yellow tinted wings. Apparently the females gather pollen only from *Ribes*.

### 4. *Andrena ceanothifloris* Linsley, new species

Black, clothed with black pubescence, intermixed with brownish hairs (female), notal pubescence mostly whitish (male); enclosure of propodeum poorly defined, not bounded by a rim, surface finely, very closely punctured, neither rugose nor carinate; abdomen of female clothed with long, coarse, depressed hairs; mandibles of male long, slender, slightly reflexed at apex, simple, not bidentate.

*Female*.—*Head* broader than long; antennae black, first flagellar segment scarcely as long as second and third together; vertex finely punctured, sparsely clothed with erect hairs; forehead finely, closely, striate-punctate; foveae not distinctly widened above the middle, broadly rounded beneath, and extending slightly below level of basal line of clypeus; clypeus shining, very finely reticulate, shallowly, moderately densely punctured, except for a median longitudinal impunctate line, sparsely clothed with sub-erect brownish hairs; process of labrum very transverse, bilobed, sides and apex emarginate; mandibles moderately broad, lying one upon the other in repose, distinctly indented before apex. *Scutum* dull, posterior area of disk shallowly, moderately, sparsely punctured, the punctures averaging about three punc-



ture widths apart, remaining surface very finely, sparsely punctured, clothed with moderately long hairs, which are shorter than those of pleura; scutellum shallowly, closely punctured except for a large, smooth area on each side of middle at base, surface clothed with erect hairs, which are denser than those of scutum; mesepisterna finely, closely punctured; wings lightly infuscated, stigma dark brownish; legs clothed with coarse, black hairs, tibial scopa compact, the hairs subdepressed; flocculus of posterior trochanters long, curled, densely plumose, almost perfectly formed. *Propodeum* shallowly, inconspicuously punctured, enclosure poorly defined, without a raised margin, very finely, closely punctured, neither rugulose nor carinate. *Abdomen* dull, surface minutely reticulate, very sparsely punctured, clothed with very long, coarse, depressed hairs, which are slightly shorter on the ventral surface. Length 10.3 mm., anterior wing 9 mm.

*Male*.—*Head* very much broader than long; antennae black, first flagellar segment distinctly shorter than second, which is subequal in length to third; face shallowly but not densely punctured; clypeus shining, black, without a median impunctate line, the punctures varying from two to six puncture widths apart, apex densely fringed with white, plumose hairs; process of labrum reduced to a polished, transverse, arcuate ridge; mandibles long, slender, slightly reflexed at tip, simple or very feebly indented before apex. *Scutum* dull, very finely reticulate, sparsely punctured, sparsely clothed with erect, whitish hairs, which are more abundant near margins of disk, but shorter than those of pleura; scutellum and metanotum finely, sparsely punctured; densely clothed with long, erect, whitish hairs; wings lightly infuscated, stigma large, brownish black; legs black, finely, sparsely punctured, femora clothed with long dense, white pubescence, tibiae and tarsi clothed with brownish hairs, which are not dense. *Propodeum* very finely punctured, enclosure poorly defined, without a raised margin, surface finely, closely punctured, neither rugulose nor carinate. *Abdomen* finely reticulate; basal tergite with fine, but more or less distinct, punctures, from which arise erect, whitish hairs, remaining tergites very finely, inconspicuously punctured, sparsely clothed with fine, suberect, blackish hairs. Length 8.5 mm., anterior wing 7.75 mm.

*Holotype*: No. 4231, Mus. Calif. Acad. Sci. Ent., female, taken by the writer about two miles north of Pine Cove, San Jacinto Mts., Calif., (alt. approx. 6,000 ft.), July 10, 1936, gathering pollen from *Ceanothus integerrimus*; *allotype*: No. 4232, Mus. Calif. Acad. Sci. Ent., male, from Tetley Park, San Bernardino Mts., Calif., May 16, 1936, collected by Mr. Charles Michener, also at flowers of *C. integerrimus*. Paratypes: nine females with the same data as holotype and one female from Tetley Park, San Bernardino Mts., May 23, 1936 (Linsley); eight females in the collection of Mr. P. H. Timberlake, and nine females in the collection of Mr. F. R. Platt, taken at the same time and place as the holotype (F. R. Platt collector); six females in the collection of the California Academy of Sciences, three from Forest Home, San Bernardino Co., Calif., June 11–12, 1928 (E. C. Van Dyke), and three from the mountains near Banning, Calif., May 29, 1928 (E. C. Van Dyke).

*A. ceanothifloris* belongs in that group of black *Andrenas* with the enclosure of the propodeum poorly defined, non-rugulose and non-carinate. From all of the other known species in this series (males unknown), the female differs at once in the relatively short first flagellar segment of the antenna (scarcely as long as the two following together) and the long, coarse, depressed hairs which clothe the

abdomen. From the males of the other black species, *ceanothifloris* may be recognized by the long, slender, reflex mandibles which are scarcely notched at apex.

### 5. *Andrena hicksi* Cockerell

*Andrena hicksi* COCKERELL, 1925, Ann. Mag. Nat. Hist. (9) 16:628, ♀

This species may be distinguished by the very narrow, parallel-sided facial foveae. In some examples the face is vaguely greenish, the abdomen tinted with dark blue. The type has not been seen, but examples from near Ward, Colorado, June 2-9, 1933 (H. G. and H. E. Rodeck), submitted for study by Mr. E. Lanham, are referred to this species on the basis of the original description. The type locality is Boulder, Colorado.

### 6. *Andrena pineti* Cockerell

*Andrena nigerrima pineti* COCKERELL, 1931, Am. Mus. Nov. 458:13, ♀.

*Female*.—Body black, with black pubescence. Antennae with first flagellar segment nearly as long as the three following, together; facial foveae widened above the middle, extending to basal line of clypeus; median line of clypeus scarcely evident; process of labrum transverse, welt-like. Scutum tessellate, shallowly and moderately closely punctured, the punctures mostly one to one and one-half puncture widths apart, discal pubescence shorter than pleural hairs; propodeum with a vague, median ridge, enclosure poorly defined; wings lightly infuscated, not clouded at apex. Abdomen clothed with short, erect pubescence, finely, sparsely, indistinctly punctured, punctures of second tergite mostly about three puncture widths apart. Length 9 mm.

*Andrena pineti* was first described as a subspecies of *A. nigerrima* Casad, but it differs so markedly from the latter in the form of the process of the labrum that it seems best to consider it a distinct species. It may be further separated from *nigerrima* by the uniformly infuscated wings (not clouded at apex), and by the very poorly defined, median line of the clypeus.

Material examined: holotype, Pine Bluffs, Wyoming (collection of American Museum of Natural History) and one cotype (collection of Dr. T. D. A. Cockerell).

### 7. *Andrena nigerrima* Casad

*Andrena nigerrima* CASAD, 1896, Ann. Mag. Nat. Hist. (6) 18:83, ♀; COCKERELL, 1898, Bull. Sci. Lab. Den. Univ. 11:48, ♀; COCKERELL, 1898, Bull. Univ. N. Mex. 1:48, ♀; BRUNER, 1903, Trans. Am. Ent. Soc. 29:244, ♀.

*Female*.—Body black, with black pubescence. Antennae with first flagellar segment nearly as long as the three following, together; facial foveae widened and broadly rounded above, narrowly rounded below, extending a little below antennal bases; median line of clypeus distinct but irregular; process of labrum large, basal

width about three times length, apex about one-half as wide as base, shallowly but distinctly emarginate. Scutum dullish, punctures mostly less than one puncture width apart, pubescence shorter than pleural hairs, moderately dense, but not concealing surface; wings lightly infuscated, apex with a dark cloud, stigma ferruginous. Abdomen densely clothed with short, suberect hairs, finely, densely, distinctly punctured, except first tergite, which is impunctate over basal one-half to two-thirds. Length 10 mm.

Only the type of this species has been studied (collection of United States National Museum). It may be easily recognized by the impunctate basal half of the first abdominal tergite and apically clouded wings.

### 8. *Andrena irana* Cockerell

*Andrena irana* COCKERELL, 1931, Ann. Mag. Nat. Hist. (10) 3:392, ♀.

*Female*.—Body black, abdomen with a slight bluish tinge, pubescence black. Antennae with first flagellar segment longer than second and third together, shorter than three following together; facial foveae broad, widened above middle, extending a little below antennal bases; median line of clypeus not evident; process of labrum emarginate at apex. Scutum moderately closely, shallowly punctured, the punctures mostly about one puncture width apart; wings uniformly, lightly infuscated, apex not clouded. Abdomen shining, finely, but distinctly punctured, the punctures averaging less than three puncture widths apart. Length 11 mm.

This species is related to the preceding, but differs in the punctured basal abdominal tergite, uniformly infuscated wings, and in having the abdomen vaguely tinted with bluish. Several females have been examined, all from Boulder, Colorado, May 2 (C. H. Hicks, collector).

### 9. *Andrena pertristis* Cockerell

*Andrena pertristis* COCKERELL, 1905, Can. Ent., 37:372, ♀.

The female of this species is very distinct by its large size, robust form, and short velvety pubescence. The following description is based on the supposed male:

*Male*.—Black, clothed with blackish pubescence, except on scutum, scutellum, and metathorax, where it is long, whitish. *Head* with its facial quadrangle broader than long; vertex and interantennal area moderately densely clothed with long, erect black hairs; antennae brownish-black, first flagellar segment distinctly longer than second; clypeus sparsely clothed with erect, black hairs, apex without a dense hair fringe, surface coarsely punctured, the punctures mostly subcontiguous, but more widely separated at middle, without a definite, impunctate median line; process of labrum broadly truncate at apex; mandibles robust, extending beyond opposite apical margin of labrum, distinctly indented before apex, tips crossing over slightly in repose. *Scutum* dull, moderately densely clothed with erect, long, whitish hairs, which are subequal in length to the black, pleural hairs, surface finely reticulate, coarsely, shallowly, but not densely punctured; scutellum and metanotum densely clothed with white hairs, which are longer and denser than those of scutum; wings infuscated, stigma reddish-brown; legs clothed with brownish and blackish hairs.

*Propodeum* finely reticulated, with a superimposed network of vague but larger reticulations in area surrounding enclosure; enclosure well defined, surrounded by an elevated rim, surface with about ten, distinct, well separated, straight, more or less longitudinal carinae. *Abdomen* shining, finely, sparsely punctured, the punctures averaging at least six puncture widths apart, surface clothed with a few, fine, obscure, suberect, black hairs. Length 11 mm., anterior wing 9 mm.

Described from a male taken in the company of a female *pertristis* at Idyllwild, San Jacinto Mts., Calif., on June 10, 1936 (Linsley). A second example, tentatively referred to this species, is in the collection of Mr. Charles Michener. It was captured in Tetley Park, San Bernardino Mts., May 16, 1936, at flowers of *Prunus demissa*.

The above male is easily distinguished from all other known males of the present group in the sculpture of the propodeum (area with about ten distinct, straight, well separated, more or less longitudinal carinae). In this character it must be similar to the female of *stictigastrea* (judging from the description of the latter), but the length of that species is given as 9.5 mm., and the unknown male must be considerably smaller than that of *pertristis*.

The type specimen (female) of *pertristis* was from Los Angeles. Other California localities include: mountains near Banning, May 29 (E. C. Van Dyke), Big Pines Camp, Los Angeles Co., June 16, on *Phacelia* (Timberlake), Lone Pine Canyon, San Bernardino Co., June 16, on *Stanleya* (Timberlake) and Idyllwild, San Jacinto Mts., June 10 (Linsley).

#### 10. *Andrena grundeli* Linsley, new species

Black, clothed with black pubescence intermixed with a few brownish hairs (female), or with predominantly white pubescence (male); enclosure of propodeum with coarse, irregular, mostly longitudinal or oblique carinae; wings very dark, almost black; process of labrum funnel-shaped (female), strongly bilobed (male).

*Female*.—*Head* broader than long; antennae dark brownish, first flagellar segment longer than second and third together; vertex closely punctured, except for a smooth, impunctate area on each side of ocellar triangle, circumantennal area closely striato-punctate, face finely, sparsely pubescent with moderately long, brownish hairs, foveae widest above middle, broadly rounded above and below, upper margin extending above posterior line of ocelli, lower margin falling short of basal line of clypeus; clypeus shining, coarsely punctured, the punctures averaging one to two widths apart, except for the median, impunctate line, which is broad, conspicuous, but not well defined, apex of clypeus fringed with brownish hairs; process of labrum polished, about as long as basal breadth, suddenly narrowed and constricted over apical two-thirds, narrowed portion very convex, not quite one-third of basal breadth; mandibles broad, distinctly notched. *Notum* opaque, very sparsely clothed with short, inconspicuous hairs, surface closely, subcontiguously punctured, the punctures mostly at least one puncture width apart; wings very dark, almost black; legs clothed with blackish and brownish hairs, scopa dark brownish black, composed of long, moderately loose hairs; flocculus of posterior

trochanters sparsely and very imperfectly formed. *Propodeum* closely punctured, the punctures a little closer than those of scutum, enclosure coarsely sculptured, with irregular longitudinal, or slightly oblique carinae, margin defined by a narrow, inconspicuous raised line. *Abdomen* shining, clothed with fine, erect hairs, tergites rather coarsely punctured, except for a broad, impunctate apical margin, which is ten or more puncture widths broad, punctures on basal segment mostly one to two puncture widths apart; anal fimbria brownish black. Length 15 mm., anterior wing 13 mm.

*Male*.—*Head* with facial quadrangle a little broader than long; antennae, beyond first flagellar segment, brownish-black, first flagellar segment slightly longer than second; facial pubescence long, erect, white, except along margins of eyes where it is black; clypeus shining, rather closely, uniformly and moderately coarsely punctured, the punctures nearly contiguous, surface clothed with very long, white pubescence; process of labrum deeply bilobed; mandibles reaching distinctly beyond opposite margin of labrum, notched before apex, crossing over slightly in repose. *Thorax* clothed almost entirely with white pubescence; scutum and scutellum dull, closely, moderately coarsely punctured, the punctures mostly less than one puncture width apart; metanotum more densely clothed with longer hairs than scutum; legs slender, mostly clothed with whitish pubescence, intermixed with black on tibiae and tarsi; wings very dark brownish-black. *Propodeum* coarsely subcontiguously punctured, enclosure coarsely punctured, with coarse, predominantly longitudinal rugae. *Abdomen* shining, distinctly and moderately coarsely punctured, the punctures mostly one to two puncture widths apart. Length 11 mm., anterior wing 9 mm.

*Holotype*: No. 4233, Mus. Calif. Acad. Sci. Ent., female, and *allotype*: No. 4234, Mus. Calif. Acad. Sci. Ent., male, from **Nipiniwasse, near Midway, Madera Co., Calif.**, (adjacent to Mariposa-Madera county line), May 24, 1936, collected by Mr. E. S. Ross. Paratypes: one female (in collection of writer) with same data, one female from Mokelumne Hill, Calaveras Co., Calif., May 22, 1931, R. L. Usinger collector, and five females, Bass Lake, Calif., June 9, 1937, B. D. White collector (two in collection of Mr. White, remainder in collection of author).

In size, *A. grundeli* approaches *pertristis* and *omninigra* but differs from these (as well as all other known members of the group) by the dull, nearly nude scutum of the female, and the very dark nearly black wings.

### 11. *Andrena bernardina* Linsley, new species

Black, clothed mostly with blackish pubescence (female), notal pubescence whitish (male); process of labrum suddenly narrowed over apical one-half (female), deeply bilobed (male); enclosure of propodeum with fine, irregular, predominantly transverse or oblique rugae; wings lightly infuscated (male), blackish (female).

*Female*.—*Head* broader than long; antennae dark brownish, first flagellar segment subequal in length to second and third together; vertex rather closely punctured, clothed with long, fine, erect, black and brownish hairs; foveae widest at upper three-fourths, broadly rounded above and below, upper margin barely attaining posterior line of ocelli, lower margin reaching basal line of clypeus; clypeus shining

closely, but not deeply punctured, the punctures subcontiguous to two puncture widths apart, median impunctate line narrow but well defined; process of labrum a little broader at base than long, sides constricted and narrow over apical one-half, apex feebly emarginate; mandibles broad, distinctly notched. *Scutum* subopaque, distinctly punctured, the punctures contiguous or subcontiguous, surface clothed with fine, short, inconspicuous, erect hairs; scutellum similarly sculptured and clothed; metanotum very closely punctured, the punctures more or less contiguous; pleural hairs longer than those of notum; wings blackish-brown; legs clothed with brownish and blackish hairs, scopa loosely formed of long, erect hairs; flocculus of posterior trochanters thin and very imperfectly formed. *Propodeum* coarsely, contiguously punctured, enclosure with fine, irregular rugae which are mostly transverse or oblique. *Abdomen* shining, tergites distinctly punctured, except for a narrow, inconspicuous, impunctate margin two to four puncture widths broad, punctures of basal segment averaging about three puncture widths apart, surface clothed with fine, short, erect hairs; anal fimbria brownish black. Length 12 mm., anterior wing 10 mm.

*Male*.—*Head* with facial quadrangle a little broader than long; antennae black, first flagellar segment shorter than second; face clothed with long, moderately dense, erect, blackish and whitish hairs; clypeus shining, coarsely, closely punctured, the punctures mostly subcontiguous, apex with a dense fringe of long, white, plumose hairs; process of labrum notched at apex, bilobed; mandibles reaching a little beyond opposite margin of labrum, distinctly notched before apex, tips crossing over slightly in repose. *Scutum* and scutellum dull, moderately coarsely punctured, the punctures mostly one to two puncture widths apart, surface clothed with moderately dense, whitish pubescence, which is a little shorter than that of the pleura; metanotum more closely punctured than scutum, more densely clothed with longer white hairs; wings tinged with brownish-black; legs clothed with brownish and blackish hairs. *Propodeum* coarsely, subcontiguously punctured, enclosure moderately finely, irregularly rugulose. *Abdomen* shining, distinctly punctured, the punctures on first segment averaging about three puncture widths apart, except for a distinct, apical, impunctate margin of tergites. Length 9 mm., anterior wing 8 mm.

*Holotype*: No. 4541, Mus. Calif. Acad. Sci. Ent., female, *allotype*: No. 4542, Mus. Calif. Acad. Sci. Ent., male, and five paratypes: (four females, one male), taken by the writer in **Tetley Park, San Bernardino Mts., Calif.**, May 23, 1936, at flowers of *Potentilla glandulosa*. Additional paratypes: one female, Tetley Park, July 7, 1935, two females from the same locality, May 23, 1936, and one male, also from the same place, taken flying over the ground, all in the collection of Mr. P. H. Timberlake.

This species is related to *omninigra* Viereck, from which it may be distinguished by the smaller size (10–12 mm. as compared to 15 mm.), more widely separated punctures of the scutum, finer and more oblique rugae of the propodeum, and shorter facial foveae, which do not attain the basal line of the clypeus. From *grundeli*, it differs in the brownish, rather than dark blackish wings, and the very narrow, impunctate apical margin of the abdominal tergites of the female, the more densely punctured mesepisterna, and the predominantly black facial pubescence of the male.

## 12. *Andrena omninigra* Viereck

*Andrena omninigra* VIERECK, 1917, Trans. Am. Ent. Soc., 43:385, ♀.

*Female*.—Black with black pubescence. Facial foveae broadened above the middle, extending a little below basal line of clypeus; process of labrum about one and one-half times as broad as long, sides concave, apex narrowly rounded. Scutum opaque, closely, contiguously and subcontiguously punctured; pubescence short, sparse; wings dark brownish; propodeum coarsely, rugoso-punctate, enclosure irregularly, both longitudinally and obliquely carinate, bounding carina indistinct. Abdomen coarsely punctured, apical margin narrow, the punctures of second tergite separated by one to two puncture widths. Length 15 mm.

The only example of this species seen by the writer is the type, in the collection of the Academy of Natural Sciences, Philadelphia. It is related to *grundeli* and *bernardina*, differing from the former in the paler wings, narrow, impunctate apical margin of tergites, and finer carinae of the propodeum. From the latter it may be distinguished by the larger size, smaller facial foveae, more closely punctate scutum, etc. (see above).

## 13. *Andrena blaisdelli* Cockerell

*Andrena blaisdelli* COCKERELL, 1924, Pan-Pacific Ent., 1:59, ♀.

Among the clear-winged species with a loosely formed tibial scopa, the female of *blaisdelli* is very distinct in the dull scutum, and broad, impunctate apical margin of the abdominal tergites (giving a constricted appearance to the segments of the abdomen). The supposed male of this species has the hair of the notum white, that of the face and propodeum black. The females gather pollen from *Cryptantha* and the species ranges from San Diego County north to Los Angeles, San Bernardino, and Riverside Counties.

## 14. *Andrena oenotherae* Timberlake

*Andrena oenotherae* TIMBERLAKE, 1937, Pan-Pacific Ent., 12:69, ♀ ♂.

*A. oenotherae* rather closely resembles *A. blaisdelli*, but the female differs in the narrow, apical margin of the abdominal tergites, which are more finely and less closely punctured, the more shining clypeus, and the slightly larger average size. This species gathers pollen from *Oenothera*, but occasionally visits *Gilia*, *Ericameria*, *Cryptanthe*, *Salix*, *Eriogonum*, etc., and ranges from central California to southern Arizona. For a comparison of the putative males of *oenotherae* and *blaisdelli*, see Timberlake (1. c.).

15. *Andrena flandersi* Timberlake

*Andrena flandersi* TIMBERLAKE, 1937, Pan-Pacific Ent., 12:72, ♀.

This species may be identified readily by the nearly punctureless, apical depression of the abdominal tergites, the shining scutum, and the short, densely plumose, scutal hairs. It occurs on the Mojave Desert, on *Ericameria*, but not collecting pollen.

16. *Andrena linsleyi* Timberlake

*Andrena linsleyi* TIMBERLAKE, 1937, Pan-Pacific Ent., 12:71, ♀.

A larger and more robust species than *flandersi*, with the scutum only feebly shining. The abdomen may be tinged with reddish, and the apical half of the posterior depression of tergites two to four is smooth and impunctate. The species is found on the Colorado Desert, and has been taken at flowers of *Hyptis emoryi*, but not collecting pollen.

17. *Andrena rubrotincta* Linsley, new species

Black, abdominal tergites tinged with reddish; pubescence black or brownish-black; scutum distinctly shining, the punctures mostly two or more puncture widths apart; abdominal tergites with a narrow impunctate apical margin which at middle occupies less than one-third of the transverse depression, punctures on first tergite mostly three to six puncture widths apart.

*Female*.—*Head* with its facial quadrangle a little longer than broad; antennae black, apical half of flagellum brownish, first flagellar segment about as long as second and third together; foveae broadened and rounded above the middle, narrowed and more or less parallel-sided from middle to rounded lower margin, which falls quite short of the basal line of clypeus; clypeus moderately coarsely punctured, the punctures nearly contiguous, except for a median longitudinal smooth line, surface clothed with brownish, plumose hairs; process of labrum subtriangular, apex feebly emarginate; mandibles moderately slender, distinctly notched before apex. *Scutum* shining, finely punctured, the punctures mostly two or more puncture widths apart, surface rather densely clothed with fine, erect, brownish-black hairs, which are shorter than those of pleura; metanotum more densely punctured and pubescent than scutum; wings subhyaline, stigma dark brownish; legs clothed with coarse brownish-black hairs, scopa loosely formed of long, erect, black hairs; flocculus of posterior trochanters thin, curled, but imperfect. *Propodeum* finely granulate-punctate, enclosure defined by an elevated rim, surface finely, irregularly rugulose. *Abdomen* tinged with reddish, clothed with rather numerous, short, erect, blackish hairs; tergites with a narrow, impunctate apical margin, which at middle occupies less than one-third of posterior depression; punctures of first tergite irregularly distributed, averaging five or six puncture widths apart, those of second tergite finer, a little transverse, mostly about three puncture widths apart. Length 12 mm., anterior wing 10 mm.

*Holotype*: No. 4235, Mus. Calif. Acad. Sci. Ent., female, and one *paratype*: female, from the Colorado Desert near Needles, California, March 6, 1930 (Linsley).



This species is related to *A. linsleyi*, but differs from that species in the narrow, impunctate, apical margin of the abdominal tergites one to four, the shorter, facial foveae, which fall short of the basal line of clypeus, the distinctly shining and less closely punctured scutum, and the finely, sparsely punctured, first abdominal tergite.

### 18. *Andrena nigra* Provancher

*Andrena nigra* PROVANCHER, 1896, Nat. Can., **22**:173, ♀; BRUNER, 1903, Trans. Am. Ent. Soc., **29**:244, ♀; COCKERELL, 1916, Pomona Journ. Ent. Zool., **7**:47, ♀.

*Andrena griseonigra* COCKERELL, 1905, Can. Ent., **37**:371, ♂, new syn.

*Andrena subtristis* COCKERELL, 1905, Can. Ent., **37**:372, ♀, new syn.

This species has been subject to greater confusion than any other species in the black group. Viereck at one time considered it the same as *subtristis* (cf. Cockerell, 1916, op. cit.), although he never published this opinion, but Cockerell pointed out that this was unlikely. Later, when Viereck described *A. caliginosa*, he introduced his description with the comment that it was probably synonymous with *nigra*. Shortly before his death, Mr. Viereck labelled a specimen of *A. blaisdelli* Cockerell (now in the collection of the United States National Museum) as, "*A. nigra* Provancher, Homotype, Viereck." However, a recent examination of the type (in the Provincial Museum, Quebec) by the writer, reveals the fact that *subtristis* and *nigra* are actually identical.

Much of the confusion in connection with this species resulted from the fact that it was incorrectly described. The Abbé Provancher's description follows:

"♀.—Long. .42 pce. Noire, sans aucune tache, avec pubescence noire. Le chaperon densément ponctué avec une petite ligne lisse au milieu. Les écailles alaires noires. La pubescence du thorax cachant les téguments. Ailes enfumées-roussâtres, les nervures noires. Pattes noires avec pubescence noire. Abdomen en ovale, poli, brillant, avec pubescence noire.—Los Angeles (Coquillett)."

Actually, in this species the wings are hyaline, not smoky-reddish, and the clypeus has no median, impunctate line. However, the Provancher description was published posthumously and it is possible that had the Abbé lived a short while longer he would have re-checked with his type and corrected these errors. In any event, the only black *Andrena* in his collection (one of the two species in his series from California), and the actual specimen bearing his type label, written in his own hand, is a typical example of *A. subtristis*.

From field observations it appears that *subtristis* (*nigra*) is the female of *A. griseonigra*. The two sexes have been taken together at Laguna Beach, Calif., (Timberlake), Oakland, Calif., (Linsley),

and Antioch, Calif., (E. C. Van Dyke, M. A. Cazier, and G. E. and R. M. Bohart). The female differs from other clear-winged species in the very dull and closely punctured scutum, and dense, compact, depressed tibial scopa. The male is distinct in the narrow, impunctate apical margin of the abdominal tergites and the entire process of the labrum. The species occurs throughout the coastal region of California. Examples at hand, other than those mentioned above, are: The Gavilan, Riverside Co., at fls. *Phacelia distans* (Linsley and Timberlake), San Diego (Blaisdell), Fresno Co., (Linsley), Mojave Desert (G. E. and R. M. Bohart), San Francisco (Van Dyke), Oakland (Linsley). *Andrena nigra* apparently collects pollen only from *Phacelia*, although the males are occasionally found early in the season visiting blossoms of *Salix*.

### 19. *Andrena deserticola* Timberlake

*Andrena deserticola* TIMBERLAKE, 1936, Pan-Pacific Ent., 12:73, ♀.

In this species the scutum is shining and finely, closely punctured, and the enclosure of the propodeum finely, closely, longitudinally rugulose. It somewhat resembles *A. flandersi*, from which it may be distinguished by the long scutellar hairs and narrow punctureless apical margin of the abdominal tergites. The species occurs on the Mojave Desert and has been taken at flowers of *Baileya*, (Timberlake).

### 20. *Andrena vanduzeei* Linsley, new species

Black, abdomen tinged with bluish; pubescence predominantly black (female), notal hairs pale (male); process of labrum feebly emarginate at apex; propodeum coarsely granulate-punctate, enclosure with an elevated rim, surface coarsely, irregularly rugulose; scutum shining, punctures mostly about one puncture width apart.

*Female*.—*Head* with its facial quadrangle a little longer than broad; antennae black, first flagellar segment a little longer than fourth and fifth together; foveae broadly rounded above and below, widest above the middle, becoming slightly narrower toward lower margin, which does not attain basal line of clypeus; face densely clothed with long, erect, brownish and black hairs; clypeus shining, coarsely, closely, contiguously punctured; process of labrum emarginate at apex; mandibles short, not attaining opposite apical margin of clypeus, notched at apex. *Scutum* shining, the punctures very distinct, mostly about one puncture width apart, surface rather densely clothed with erect blackish hairs; shorter than those of pleura; scutellum similarly punctured and pubescent; metanotum more closely punctured than scutum; wings hyaline, stigma brownish black; legs clothed with black hairs, scopa dense, compact; floccus well curved and nearly perfectly formed. *Propodeum* coarsely granulate-punctate, enclosure with an elevated rim, surface irregularly rugulose, the rugulae predominantly transverse or oblique. *Abdomen* with a faint bluish lustre; tergites with a very narrow, impunctate, apical margin; segments

distinctly but finely punctured, the punctures of first tergite mostly about four or five puncture widths apart; anal fimbria brownish-black. Length 11 mm., anterior wing 9 mm.

*Male*.—*Head* with facial quadrangle broader than long; antennae dark brownish, first flagellar segment a little longer than second; clypeus closely, subcontiguously punctured, apical margin with a dense fringe of white, plumose hairs; process of labrum very transverse, about one-fourth as long as broad, apex feebly emarginate. *Notum* clothed with long, whitish hairs; scutum shining, disk sparsely hairy, surface coarsely punctured, the punctures mostly about one puncture width apart; scutellum less coarsely punctured than scutum; metanotum very densely hairy; wings subhyaline, stigma brownish black. *Propodeum* coarsely granulate-punctate; enclosure with an elevated rim, surface irregularly rugulose. *Abdomen* shining, impunctate apical margin narrow; first tergite clothed with long, erect, white hairs, surface distinctly punctured, the punctures mostly three or four puncture widths apart. Length 9.5 mm., anterior wing 8 mm.

*Holotype*: No. 4543, Mus. Calif. Acad. Sci. Ent., female, from **Huntington Lake, Fresno Co., Calif.**, 7,000 ft. alt., July 4, 1919, collected by Mr. E. P. Van Duzee; *allotype*, male, (collection of Mr. P. H. Timberlake), from General Grant National Park, June 28, 1929, collected by Mr. Timberlake. *Paratypes*: four females in the California Academy of Sciences, from Huntington Lake, July 4–23, 1919, (E. P. Van Duzee); two females in the C. L. Fox Collection (Calif. Acad. Sci.) from Giant Forest, Tulare Co., Calif., July 16–17, 1923 (Fox); three females in the collection of the writer from Sequoia National Park, July, (Linsley); six females and three males in the Timberlake collection, from General Grant National Park, June 28, 1929 (Timberlake). Mr. Timberlake took females visiting *Gayophytum diffusum* and nesting in the ground, males at *Potentilla* and *Rhamnus*.

*A. vanduzeei* is apparently most closely related to *A. deserticola*, but is separable by the coarsely granulate-punctate propodeum with its enclosure coarsely, irregularly rugulose, the rugae mostly transverse or oblique, and the bluish tinted abdomen. The average size is smaller than in *deserticola* and the species is high sierran in distribution.

### ***Andrena macrocephala* Cockerell**

*Andrena macrocephala* COCKERELL, 1916, Ann. Mag. Nat. Hist., (8) 17:278, ♂.

*Andrena peratra* COCKERELL, 1916, Pomona Journ. Ent. Zool., 7:46, ♀, n. syn.

*A. peratra* Cockerell, which was associated by its author with *nigerrima* and other members of the black group of *Andrena*, is in reality a rubbed female of *macrocephala* Cockerell. Mr. Timberlake and the writer have examined the type which is now at the Citrus Experiment Station, Riverside, California, and have found

that it agrees perfectly with typical females of *macrocephala* except that the red hair has been worn off the notum. The species is a common visitor at flowers of *Nemophila menziesii* in Los Angeles, San Bernardino, and Riverside Counties. Examples from Riverside, Calif., are very frequently parasitized by *Stylops timberlakei* Bohart, but in a series of more than one hundred specimens taken by the writer in Los Angeles County, none were thus styloped. In the San Bernardino Mts. (6,000+ ft. alt.) there is a subspecies in which the notal pubescence of the female is pale fulvous, rather than bright reddish or brownish. This form visits *Nemophila integrifolia* in Tetley Park, (Timberlake, Michener, Linsley), and may be designated as ***Andrena macrocephala tetleyi*** new subspecies.

In the typical lowland form the notal pubescence of the male varies from fulvous to bright fox red. This pale form in the male was designated by Dr. Cockerell as *var. a*, and is properly considered as a variety. In Los Angeles County about one-third of the males taken by the writer were typical, about one-third of the pale variety, the others intermediate.